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10/605,843	10/30/2003	Akira Masaoka	SIMTEK6701	2842

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/605,843
Filing Date: October 30, 2003
Appellant(s): MASAOKA ET AL.

Ernest A. Beutler
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on 01/20/2006 appealing from the Office action mailed on 09/22/2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

No evidence is relied upon by the examiner in the rejection of the claims under appeal.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1 and 2 stand rejected under 35 U.S.C. 102(b) as being anticipated by Mingo et al (6,435,158).

Mingo et al disclose a method of preventing reverse rotation in a spark ignited internal combustion engine having at least one spark plug fired by an ignition circuit (col. 2, ll. 1) and having an electrical generator (battery charger, col. 4 and ll. 20) driven by the engine and a starting device (150) for cranking the engine for starting thereof, said method comprising the steps of permitting firing of the spark plug after the starting device is initially operated, determining after the starting has been initiated if the speed of the engine decreased from a previously sensed speed sufficiently that the engine may be starting to rotate in a direction opposite to that desired, and thereafter preventing firing of the spark plug; see col. 5, ll. 64+ with reference to figure 8.
With regard to claim 2, once the firing of the spark plug has been prevented, the spark plug is not permitted to fire again until another starting operation is initiated; see col. 6, ll. 7-9.

Claim Rejections - 35 USC § 103

Claims 3-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mingo et al (6,435,158) in view of Ozawa (5,020,506).
Mingo et al disclose all the limitations as applied to claims 1 and 2 above, except for the speed of the engine detected by the output of an electrical generator driven by an

engine and the reverse running system comprising a pulser coil for operating a pulse in response to the passage of a timing mark associated with a shaft driven by the engine. Ozawa discloses an engine igniter with a reverse rotation prevention system including a pulser coil (1) associated with an electrical generator (col. 2 and ll. 48-49).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Mingo et al by using a pulser coil as disclosed by Ozawa for operating a pulse in response to the passage (rotation) of a timing mark associated with a shaft driven by the engine. The motivation to do so would have been to provide an ignition system (engine igniter) that can adjust the ignition timing over a wider range than a conventional engine igniter (Ozawa, col. 1 and ll.55-56) and which can prevent the engine from rotating in reverse (Ozawa, col. 1 and ll. 57-59).

With regard to claim 4, wherein the firing of the spark plug upon starting is not permitted until the speed of the engine reaches a predetermined first value (Mingo et al, FNSTARTRPM, figure 7).

With regard to claim 5, wherein the firing of the spark plug is prevented when the speed of engine falls below a second predetermined value (Mingo et al, FNKILLRPM, figure 7) lower than the first predetermined value.

With regard to claim 6, wherein once the firing of spark plug has been prevented, the spark plug is not permitted to fire until another starting operation is initiated (Mingo et al, reset, col. 6 and ll. 8).

With regard to claim 7, wherein the engine ignition system includes a timing mark (well known, usually to locate TDC (Mingo col. 1, ll. 19)) driven by an engine shaft and a

pulser coil (1) for providing an output signal in response to the position of the timing mark to determine the firing of the engine and the ignition of the spark plug is not permitted until the pulser coil output s a firing signal.

With regard to claim 8, wherein the speed of the engine is detected by the output of an electrical governor driven by the engine (Mingo, 160).

With regard to claim 9, where the firing of the spark plug upon starting is not permitted until the speed of the engine reaches a predetermined first value (*supra*).

With regard to claim 10, wherein the firing of the spark plug is prevented when the speed of the engine falls below a second predetermined value lower than the first predetermined value (supra).

With regard to claim 11, wherein once the firing of the spark plug has been prevented the spark until another starting plug is not permitted to fire again operation is initiated (supra).

With regard to claim 12, Mingo et al disclose an ignition and anti reverse running system for an internal combustion engine comprising a pulser coil (Ozawa, 1) for generating a pulse in response to the passage of a timing mark associated with a shaft driven by the engine, an ignition circuit for receiving the pulse and initiating the firing of a spark plug of the engine, an ignition preventing circuit for preventing the firing of the spark plug by said ignition circuit when the speed of the engine falls below a predetermined speed (Mingo, figures 7 and 8) after the engine has been initially cranked for starting thereof.

With regard to claim 13, wherein the engine drives an electrical generator (Ozawa, col. 2 and ll. 48-49) and the speed of the engine is determined by the output of said electrical generator.

With regard to claim 14, wherein the ignition circuit is prevented from firing the spark plug by the ignition preventing circuit until the speed of the engine reaches a predetermined first value and the firing of the spark plug is prevented when the speed of the engine falls below a second predetermined value lower than said first predetermined value (*supra)*.

With regard to claim 15, wherein the electrical generator has a plurality of phases and the speed of the engine is determined by a summing circuit that sums the output of at least two of said phases (Ozawa, col. 3 and ll. 4-23).

With regard to claim 16, wherein the summing circuit comprises reverse current preventing (reverse rotation) diodes each receiving the output of a respective phase of the electrical generator, a capacitor charged by the electrical generator output, and a resistor connected between a capacitor and reverse revolution discriminating circuit.

With regard to claim 17, wherein the reverse revolution discriminating circuit comprises a flip-flop circuit (24) connected to a pulse receiving circuit receiving the output of the pulser coil and a transistor circuit connected between said flip-flop circuit (24) and the resistor of the summing circuit (Ozawa, col. 3 and ll. 4-23).

(10) Response to Argument

Claims 1 and 2 are anticipated by Mingo et al (US 6,435,158)

(a) Appellants argued that their device protects against reverse rotation "after starting is initiated" not "after it is completed" (page 3/9, paragraph before last; emphasis added).

In response: the claimed subject does not exclude protection against reverse rotation "after starting is completed". It merely requires that the protection against reverse rotation to take place "after starting is initiated".

(b) Appellants argued that in Mingo et al, the stall condition is inferred not from a decrease in speed from a previously measured speed as specifically claimed by appellants but when the engine speed is less than or equal to a first engine threshold.

In response: the claimed subject matter states, "if the speed of the engine is less than a previously sensed speed". It does not require that the sensed speed be from previous start attempts or even be an engine speed. It simply states sensed speed. Mingo et al use a predetermined engine speed threshold (FNSTARTRPM) with values from "measured engine speeds" at various engine reversals (REV_RPM) and calibrated and selected to provide true "imminent stall" (col. 6 and ll. 27-40). Therefore, Mingo et al anticipate the claimed subject matter.

(c) Appellants argued that Mingo et al do not teach an electrical generator.

In response: Mingo et al teach a battery charger (col. 4 and ll. 20), which is an alternative way of saying a generator. Therefore, an electrical generator is inherently and necessarily present in the invention of Mingo et al.

Claim 12 is obvious under 35 USC 103

Claim 12 requires a pulser coil (Ozawa, 1) for generating a pulse in response to a passage (rotation) of a timing mark associated with a shaft (crankshaft) driven by the engine. Mingo et al do not clearly teach all the limitations as claimed. Even though, they do teach a "pulse ring" formed or mounted on the crankshaft (col. 3 and ll.15-16), which suggests the presence of pulser coil. Ozawa was provided as a secondary reference that discloses an engine igniter with a reverse rotation prevention system and including a pulser coil (1). Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Mingo et al by using a pulser coil (1) as disclosed by Ozawa (and suggested by Mingo et al) to provide an ignition system (engine igniter) that can adjust the ignition timing over a wider range than a conventional engine igniter (Ozawa, col. 1 and ll.55-56) and which can prevent the engine from rotating in reverse (Ozawa, col. 1 and ll. 57-59)

Claims 3 and 8 are obvious under 35 USC 103

Appellants argued that determination of speed from the generator output is lacking in Ozawa.

In response: Ozawa teaches that the output pulse of the flip-flop 24 is input to the ignition timing control circuit 25, which calculates the appropriate ignition timing in accordance with the engine speed, col. 4 and ll. 8-10, which suggests relations of the pulse outputs and the engine speed.

Claims 4,9 and 13 are obvious under 35 USC 103

Appellants indicated with regard to these set of claims that previous arguments with reference to the spark plug ignition being after starting of the engine be considered as they the claims depend from claims 3,8 and 12. Consequently, the previously provided counter arguments are thought to be sufficient.

Claims 5,6,11 and 14 are obvious under 35 USC 103

Appellants again refer to previously presented arguments; consequently corresponding counter arguments were previously presented.

Claim 7 is obvious under 35 USC 103

Appellants contend that timing mark, pulser coil and ignition not permitted until the pulser coil outputs a first signal are not taught.

As stated above, the engine ignition system includes a timing mark (well known, usually to locate TDC (Mingo col. 1, ll. 19)) driven by an engine shaft and a pulser coil (1) for providing an output signal in response to the position of the timing mark to determine the firing of the engine and the ignition of the spark plug is not permitted until the pulser coil output s a firing signal.

Claims 15-17 are obvious under 35 USC 103

Appellants contend that the specific details of the electrical circuitry are not taught in the relied upon references.

In response, it should be noted that the reverse revolution (rotation) discriminating circuitry disclosed by Ozawa comprises a flip-flop circuit (24) connected to a pulse receiving circuit receiving the output of the pulser coil and a transistor circuit connected

between said flip-flop circuit (24) and the resistor of the summing circuit (Ozawa, col. 3 and ll. 4-23).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Mahmoud Gimie, Primary Examiner

MAHMOUD GIMIE
PRIMARY EXAMINER

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